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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/019,005	12/26/2001	Ralf Neuneier	1454.1128	9985
21171	7590	01/25/2005	EXAMINER	
STAAS & HALSEY LLP SUITE 700 1201 NEW YORK AVENUE, N.W. WASHINGTON, DC 20005			ZHU, JERRY	
			ART UNIT	PAPER NUMBER
			2121	

DATE MAILED: 01/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/019,005	<b>Applicant(s)</b> NEUNEIER ET AL.	
	<b>Examiner</b> Jerry Zhu	<b>Art Unit</b> 2121	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 20-37 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 20-37 is/are rejected.
- 7) ☐ Claim(s) 31 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |  |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____  |

## **DETAILED ACTION**

### ***Priority***

Receipt is acknowledged of papers filed under 35 U.S.C. 119 (a)-(d) based on an application filed in Germany on June 23, 1999. Applicant has not complied with the requirements of 37 CFR 1.63(c), since the oath, declaration or application data sheet does not acknowledge the filing of any foreign application. Foreign prior date is not considered in this office action.

### ***Response to Amendment***

Amendment to the overall application is acknowledged and acted upon in this office action.

### ***Claim Rejections - 35 USC § 101***

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 20-30, 32-37 are directed as non statutory.

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1. Examiner finds that *In re Warmerdam*, 33 F.3d 1354, 31 USPQ2d 1754 (Fed. Cir. 1994) controls the 35 USC §101 issues on that point for reasons made clear by the Federal Circuit in *AT&T Corp. v. Excel Communications, Inc.*, 50 USPQ2d 1447 (Fed. Cir. 1999). Specifically, the Federal Circuit held that the act of:

...[T]aking several abstract ideas and manipulating them together adds nothing to the basic equation. *AT&T v. Excel* at 1453 quoting *In re Warmerdam*, 33 F.3d 1354, 1360 (Fed. Cir. 1994).

Examiner finds references such as “neural network” and “technical systems” in claim 1 are just such abstract ideas. Neural network is defined on the web as: “a member of a class of software that is ‘trained’ by presenting it examples of input and the corresponding desired output.” Neural network are also seen being defined as computer programs or mathematic algorithms. “Technical systems” is also such abstract idea. What is a technical system? Is it a mathematical model, a software system, a municipal transportation system, an air conditioning system, a speed-boat, or a global positioning system? The independent claim clearly failed to distinguish unambiguously what the invention is.

2. Examiner bases his position upon guidance provided by the Federal Circuit in *In re Warmerdam*, as interpreted by *AT&T v. Excel*. This set of precedents is within the same line of cases as the *Alappat-State Street Bank* decisions and is in complete agreement with those decisions. *Warmerdam* is consistent with *State Street*’s holding that:

Today we hold that *the transformation of data, representing discrete dollar amounts, by a machine through a series of mathematical calculations into a final share price*, constitutes a practical application of a mathematical algorithm, formula, or calculation because it produces 'a useful, concrete and tangible result' -- *a final share price momentarily fixed for recording purposes and even accepted and relied upon by regulatory authorities and in subsequent trades.* (emphasis added) *State Street Bank* at 1601.

3. That case later eliminated the "business method exception" in order to show that business methods were not per se nonstatutory, but the court clearly *did not* go so far as to make business methods *per se statutory*. A plain reading of the excerpt above shows that the Court was *very specific* in its definition of the new *practical application*. It would have been much easier for the court to say that "business methods were per se statutory" than it was to define the practical application in the case as "...the transformation of data, representing discrete dollar amounts, by a machine through a series of mathematical calculations into a final share price..."
4. Applicant cites no such specific results to define a useful, concrete and tangible result in the indicated claims. Neither does Applicant specify the associated practical application with the kind of specificity the Federal Circuit used.

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5. Accordingly, the Examiner finds that Applicant manipulated a set of abstract ideas of “neural network” and “technical systems” through various arrangements into more abstract ideas such as “common overall system”.
6. Claim 20 is not limited to exclude such abstractions, the broadest reasonable interpretation of the claim limitations includes such abstractions. Also, dependent claims 21-30 are just various arrangements of these abstractions of claim 1. Therefore, the claims 20-30 are impermissibly abstract under 35 U.S.C. 101 doctrine. Claims 20-30 are, thereby, rejected under 35 U.S.C. 101.
7. Claims 32-37 are corresponding method claims of claims 20-30 and therefore are under the same doctrine of 35 U.S.C 101 of claim 20-30. Examiner finds no further limitation into tangible and concrete applications other than references such as “input variables,” “output variables,” and “system state.” These terms are not connected to tangible and concrete embodiment or any particular practical applications and hence are just abstract ideas. Therefore claims 32-37 are rejected under 35 U.S.C. 101.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 20-30, 32-37 are rejected under 35 U.S.C. 102(b) as being anticipated by text "Neural Networks for Identification, Prediction, and Control" authored by Duc Truong Pham et, al (Pham). Specifically:

**Claim 20**

9. Pham proposed a hierarchical neural network model (at page1 and paragraph 2, Pham defines a neural network as consisting of a number of interconnected processing elements which would be a computer system) for controlling a plant (Fig 6.4, page 116, second paragraph), comprising:

- A first neural network controller (fig 6.4, neural net 1)(page 117, line 10) describing the first technical system (page 117, line 10)(the technical system is the plant dynamics)
- A second neural network controller (fig 6.4, neural net 2)(page 117, line 17) describing a second technical system (fig 6.4, conventional controller) coupled to the first neural network to compensate the first technical system. (Fig 6.4, the two neural nets are connected)

**Claim 21-25**

10. Pham's neural network controllers, consisting of processing elements (computing elements or neurons) (page111, line 4-5), has inputs and outputs (page 112,

paragraph 4; page 113, line 1). There are connections between the processing elements (page 111, line 6). The connection between neurons are variable configuration or the strength of the connections can be modified into same or different weighting values. (page 111, line 8).

### **Claims 26-30**

11. In Pham's neural network controller model in fig. 6.4 on page 116, the first technical system (the plant) and the second technical system (the conventional controller) are interconnected with two neural nets to form an overall system. The first and the second technical systems may or may not be the same or the second technical system (the conventional controller) would have been constructed as the same as the first technical system. (page 117, line 8-9) Since the neural networks function as identifiers to identify both technical systems respectively (page 117, last three lines of the first paragraph), the two neural nets determine or predict the overall system dynamics. (page 117, line 30-33) The first neural net monitors the first technical system (page 117, line 26-27) and the second neural net is the main controller (page 117, line 27-28).

### **Claim 32-37**

12. Claims 32-37 are method claims corresponding to system claims 20-30. There are no new subject matter added to the system claims other than supplying input variables and determining output variables. The inputs and outputs of two technical



systems and two neural nets and their relationships are clearly depicted in Fig. 64 at page 116. Therefore claims 32-37 are rejected in the same term of claim 20-30.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claim 31 rejected under 35 U.S.C. 103(a) as being unpatentable over Pham as applied to claim 1 above, and further in view of Mihatsch U.S. Patent Number 6,029,157 (Mihatsch). Specifically:

18. Pham teaches a hierarchical neural network model for dynamic systems identification, predication and control by using two neural networks. Pham fails to teach a particular dynamic system that is a chemical reactor. Mihatsch teaches method to control a chemical reactor through the use of neural networks (col.1, lin.8-10; col.2, lin.36-40). One of ordinary skill in the art would have provided the hierarchical neural network model for dynamic systems identification, predication and control, taught by Pham, for the purpose of dynamic system identification and control for a chemical reactor. As a result it would have been obvious to one of ordinary skill in the art at the time of applicants' invention to modify the invention

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taught by Pham by implementing the plant that has a chemical reactor as taught by Mihatsch.

### **Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jerry Zhu whose telephone number is (571) 2724237. The examiner can normally be reached on 8:30 - 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anthony Knight can be reached on (571) 272-3687. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jerry Zhu  
Examiner  
Art Unit - 2121  
Monday, December 06, 2004

  
**Anthony Knight**  
Supervisory Patent Examiner  
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